

Background:

The SERDP Ecosystem Management Program (SEMP) selected this project to help identify indicators of ecosystem change focusing on the test site of Fort Benning, Georgia but with the intent that the ideas would be applicable across the diversity of Department of Defense (DoD) lands.

Objective:

This effort is identifying indicators that signal ecological change in intensely and lightly used ecological systems. The goal is that these indicators improve managers' ability to manage activities that are likely to be damaging and to prevent long-term, negative effects. Therefore, a suite of variables is needed to measure changes in ecological conditions. The suite to be examined includes measures of terrestrial biological integrity, stream chemistry and aquatic biological integrity, and soil microorganisms as a measure of below-ground integrity of the ecosystem.

Approach:

The identification of indicators will encompass five steps: (a) analyzing historical trends in environmental changes to identify potential indicators; (b) collecting supplemental data relating to indicators (this will of course build upon existing data already available at Fort Benning); (c) performing experiments to examine how disturbances at Fort Benning might affect these indicators; (d) analyzing the resulting set of indicators for the appropriateness, usefulness, and ease of taking the measure; and (e) developing and implement a technology transfer plan.

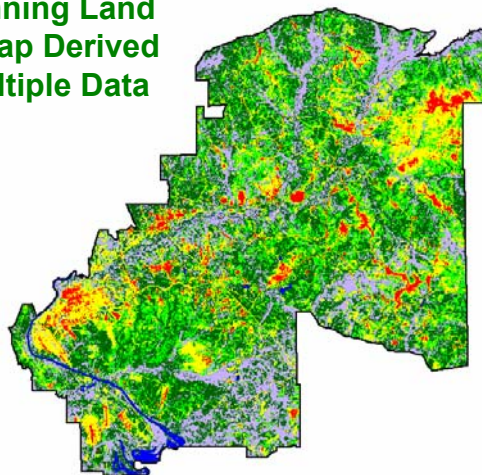
Benefit:

Identification of ecological attributes that indicate changes in critical ecological processes, structure, and function, and can be altered by management actions will contribute to ecosystem management of DoD installations. The determination of these indicators will support the guiding principles of the 1994 memorandum from the Office of the Deputy Secretary of Defense for Environmental Security.

Progress:

The project first identified criteria for metrics to be useful for resource management. Landscape metrics from a historical reconstruction of the 1827 forest types were compared to land cover changes in recent decades as measured by remote sensing data. Field studies have determined the understory vegetation characteristics of sites with different training intensities, found that microbial biomass in the soil decreased with increasing levels of disturbance, examined macroinvertebrate community structural changes as related to disturbance, and developed comparisons of stream sediment, dissolved mineral concentrations, and macroinvertebrates across a spectrum of disturbance and discharge regimes.

Fort Benning Land Cover Map Derived from Multiple Data Sets



For more information, visit the SEMP website
<http://www.denix.osd.mil/SEMP>

Contact information:

Dr. Virginia Dale, Project Manager
Oak Ridge National Laboratory
Phone: (865) 576-8043
Fax: (865) 576-8543
E-mail: vhd@ornl.gov



Dr. Harold Balbach, SEMP Program Manager
U.S. Army Engineer Research and Development Center
Phone: (217) 373-6785
Fax: (217) 373-7266
E-mail: h-balbach@cecer.army.mil

